What is claimed is:

1. An illuminator device for an optical image processing system, wherein the image processing system comprises an optical system requiring partially coherent illumination, and where the illuminator comprises:

a source of coherent or partially coherent radiation which has an intrinsic coherence that is higher than the desired coherence;

a reflective surface that receives incident radiation from said source;

means for moving the reflective surface through a desired range of angles in two dimensions wherein the rate of the motion is fast relative to integration time of said image processing system; and

a condenser optic that re-images the moving reflective surface to the entrance plane of said image processing system, thereby, making the illumination spot in said entrance plane essentially stationary.

2. The illuminator of claim 1 wherein the means for moving the reflective surface moves through the entire desired range of angles at least once during the integration time of the image processing system.

3. The illuminator of claim 1 wherein the source of partially coherent radiation comprises a synchrotron source.

4. The illuminator of claim 1 wherein the source of partially coherent radiation comprises an undulator source.

5. The illuminator of claim 1 wherein the reflective surface comprises a flat mirror.

6. The illuminator of claim 3 wherein the reflective surface comprises a multilayer-coated flat mirror.

7. The illuminator of claim 4 wherein the reflective surface comprises a multilayer-coated flat mirror.

8. The illuminator of claim 1 wherein the condenser optic is a single reflective element.

9. The illuminator of claim 8 wherein the reflective condenser element is spherical.

10. The illuminator of claim 3 wherein the condenser optic is a single reflective multilayer-coated element.

11. The illuminator of claim 10 wherein the reflective multilayer-condenser element is spherical.

12. The illuminator of claim 4 wherein the condenser optic is a single reflective multilayer-coated element.

13. The illuminator of claim 12 wherein the reflective multilayer-condenser element is spherical.

14. The illuminator of claim 1 wherein the means for moving the reflective surface comprises tilting the optic in two dimensions.

15. A method of modifying the coherence of a beam of radiation from an undulator source that comprises:

(a) directing the beam of radiation into a reflective surface;

(b) moving the reflective surface through a desired range of angles in two dimensions wherein the rate of the motion is fast relative to the subsequent observation time; and

(c) re-imaging the moving reflective surface to an observation plane, thereby, making the illumination spot in said observation plane essentially stationary.

16. The method of claim 15 wherein step c comprises moving the reflective surface through the entire desired range of angles at least once during the integration time of the image processing system.

17. The method of claim 15 wherein the source of partially coherent radiation comprises a synchrotron source.

18. The method of claim 15 wherein the source of partially coherent radiation comprises an undulator source.

19. The method of claim 15 wherein the reflective surface comprises a flat mirror.

20. The method of claim 17 wherein the reflective surface comprises a multilayer-coated flat mirror.

21. The method of claim 18 wherein the reflective surface comprises a multilayer-coated flat mirror.

22. The method of claim 15 wherein step c employs a condenser optic that has a single reflective element.

23. The method of claim 22 wherein the reflective condenser element is spherical.

24. The method of claim 17 wherein the condenser optic is a single reflective multilayer-coated element.

25. The method of claim 24 wherein the reflective multilayer-condenser element is spherical.

26. The method of claim 18 wherein the condenser optic is a single reflective multilayer-coated element.

27. The method of claim 26 wherein the reflective multilayer-condenser element is spherical.

28. The method of claim 15 wherein step b comprises moving the reflective surface comprises tilting the optic in two dimensions.